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Adams

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(54) **FASCIA GUTTER SYSTEM AND COVERINGS USING THE SAME**

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Related U.S. Application Data

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(60) Provisional application No. 61/591,397, filed on Jan. 27, 2012.

(51) **Int. Cl.**

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E04D 13/076	(2006.01)
E04D 13/158	(2006.01)
E04D 13/15	(2006.01)
E04D 13/064	(2006.01)

(52) **U.S. Cl.**

CPC ***E04D 13/076*** (2013.01); ***E04D 13/064*** (2013.01); ***E04D 13/158*** (2013.01); *E04D 13/0648* (2013.01); *E04D 13/15* (2013.01)

(58) **Field of Classification Search**

CPC E04D 13/064; E04D 13/067; E04D 13/15; E04D 13/0648

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See application file for complete search history.

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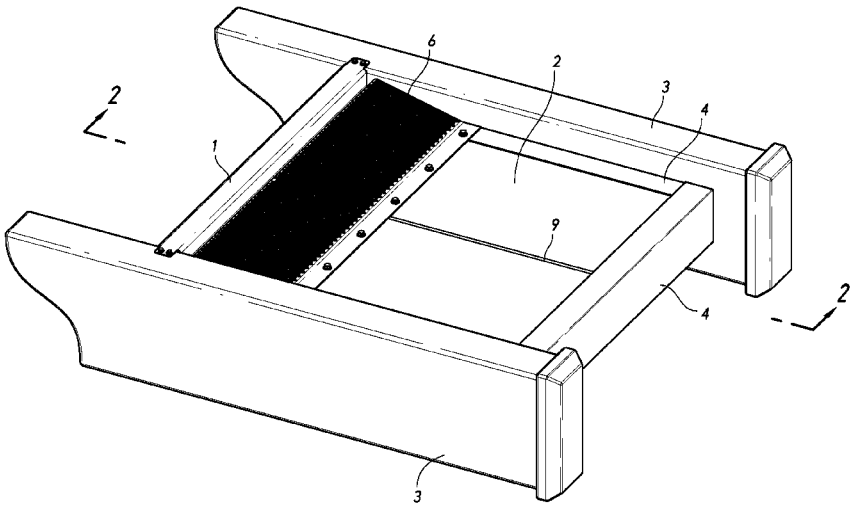
(57) **ABSTRACT**

A covering employing a fascia gutter is disclosed. The fascia gutter includes a front member, bottom member, a rear member, a ledge, a guiding groove, a protrusion and a receiving space. The bottom member connects the front member to the rear member. The receiving space is defined by the front member, the bottom member, and the rear member. The ledge is connected to the rear member. An opening is defined by the ledge and the protrusion.

17 Claims, 16 Drawing Sheets



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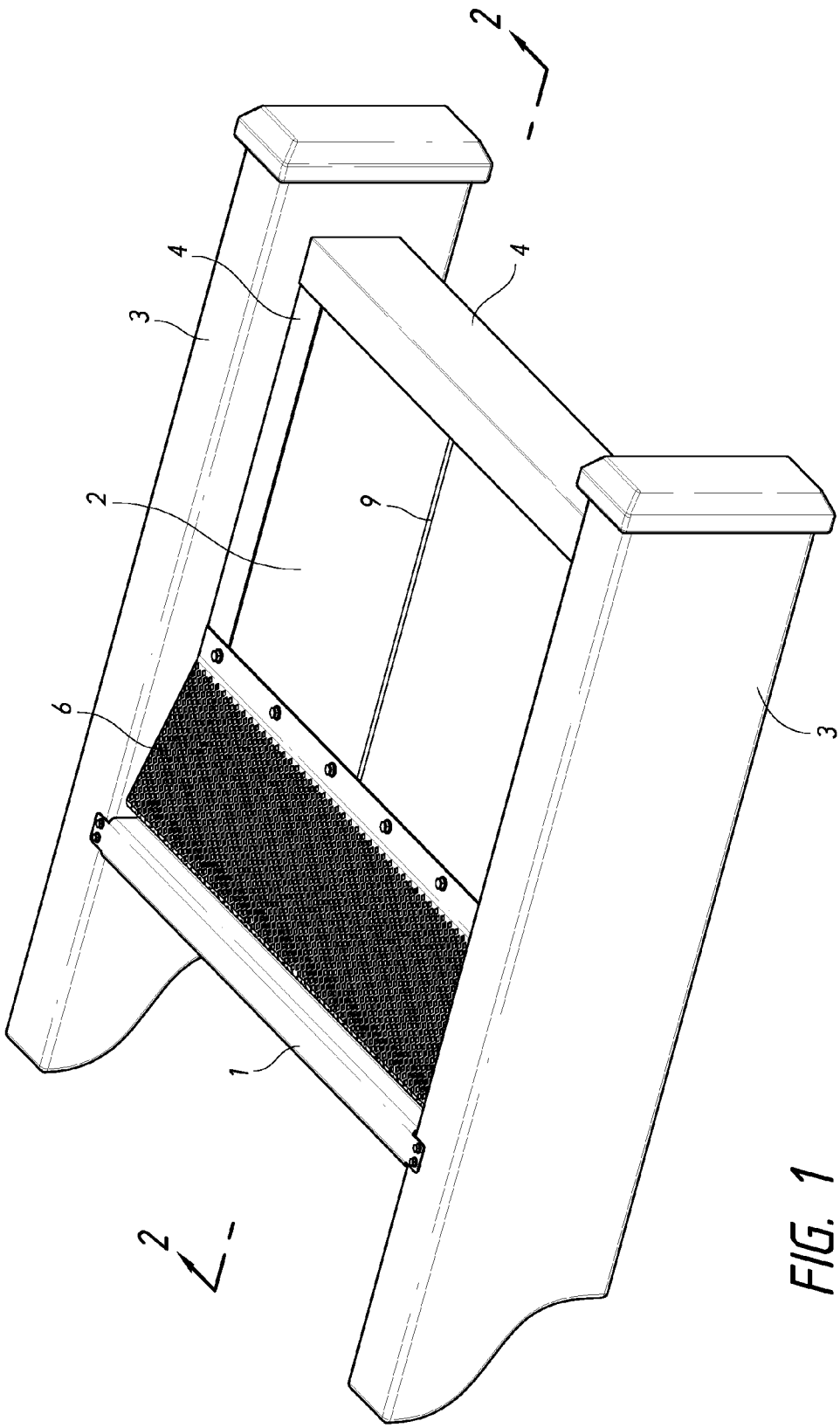


FIG. 1

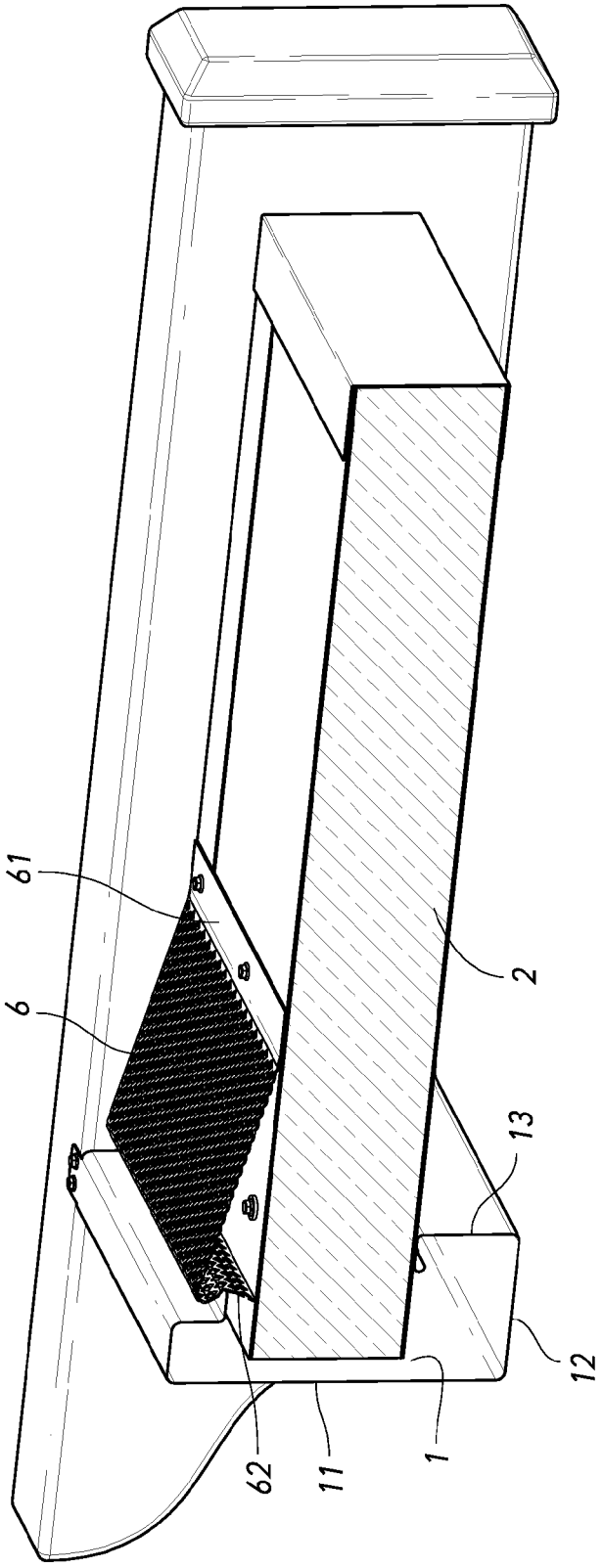


FIG. 2

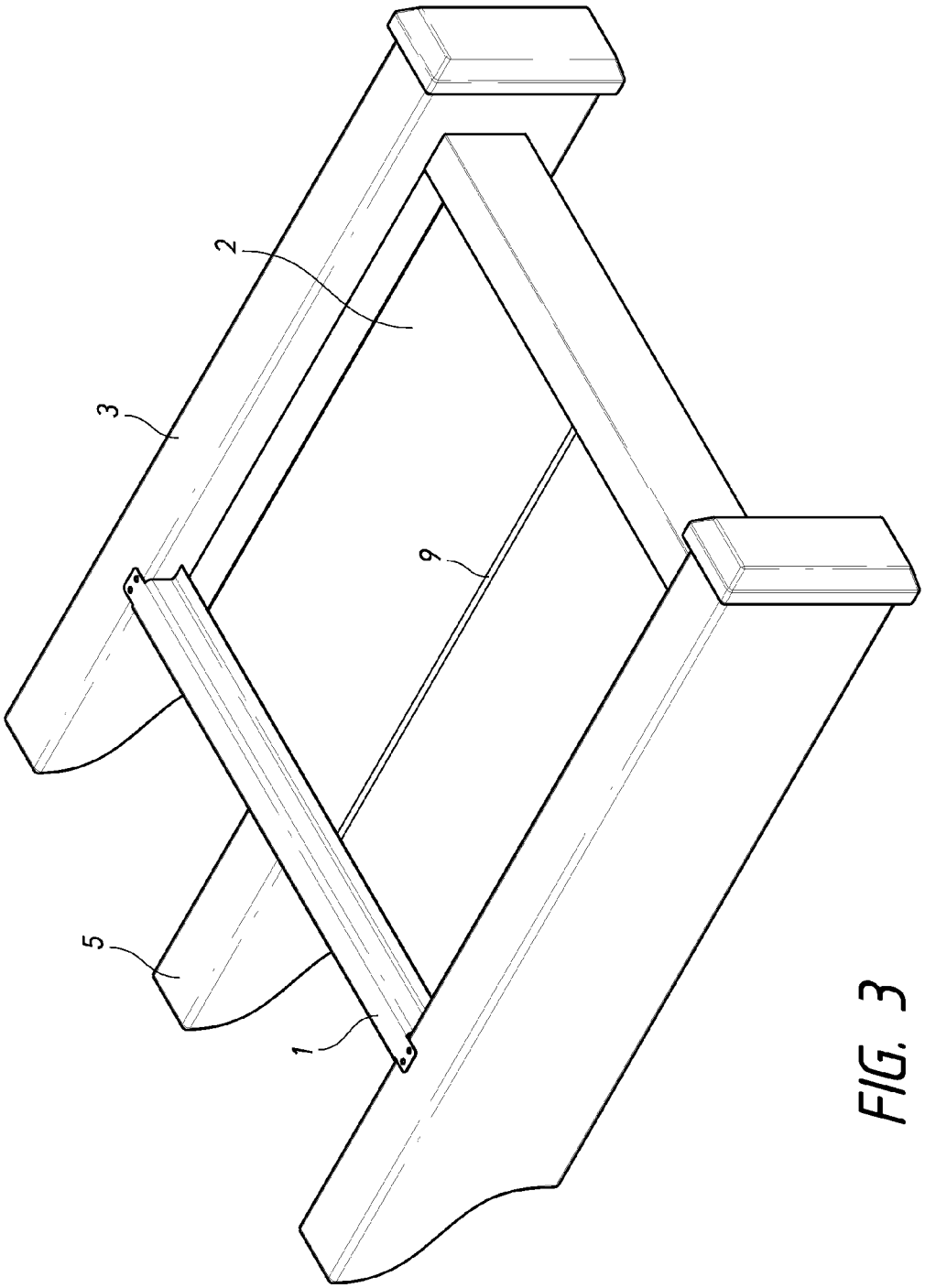


FIG. 3

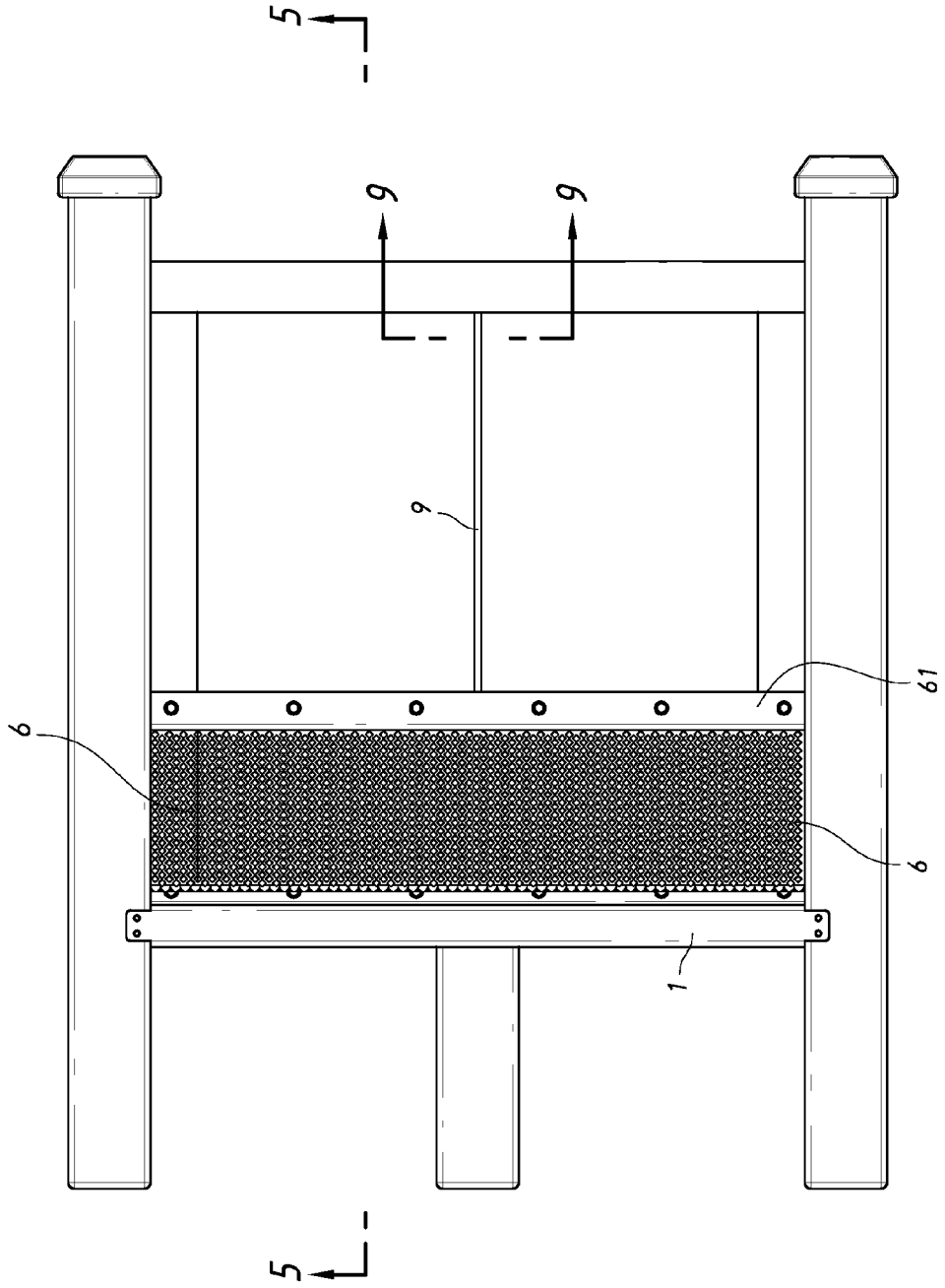


FIG. 4

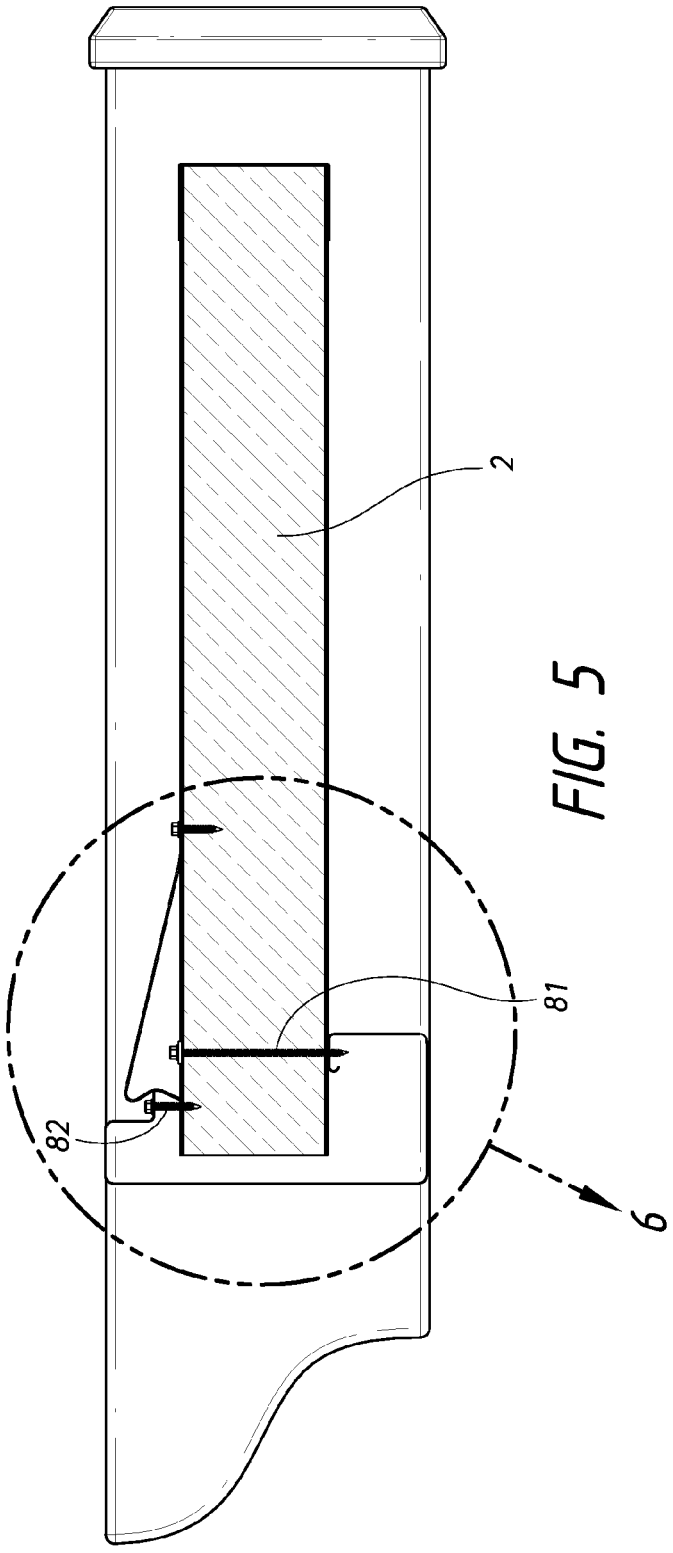
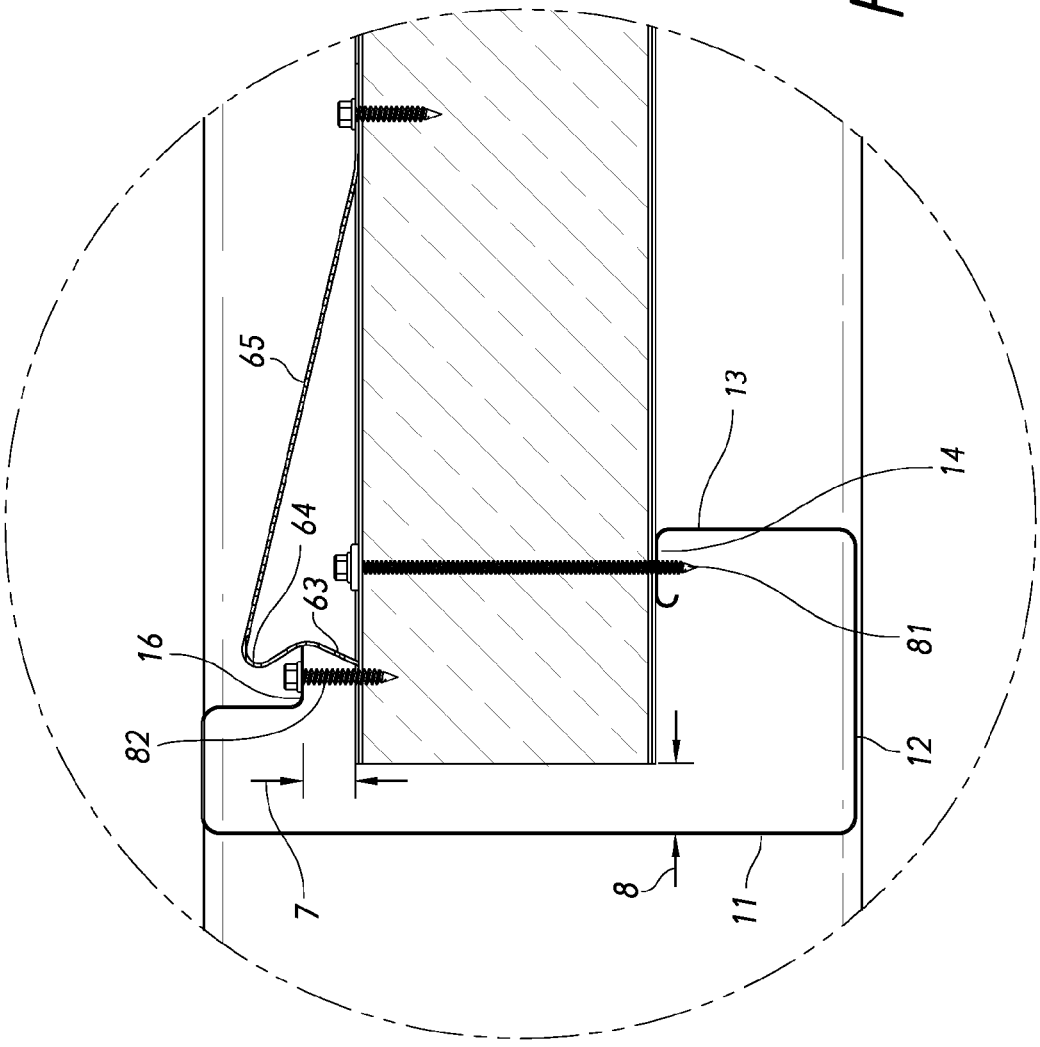


FIG. 5

FIG. 6



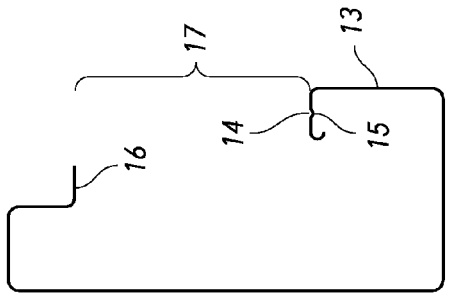


FIG. 8

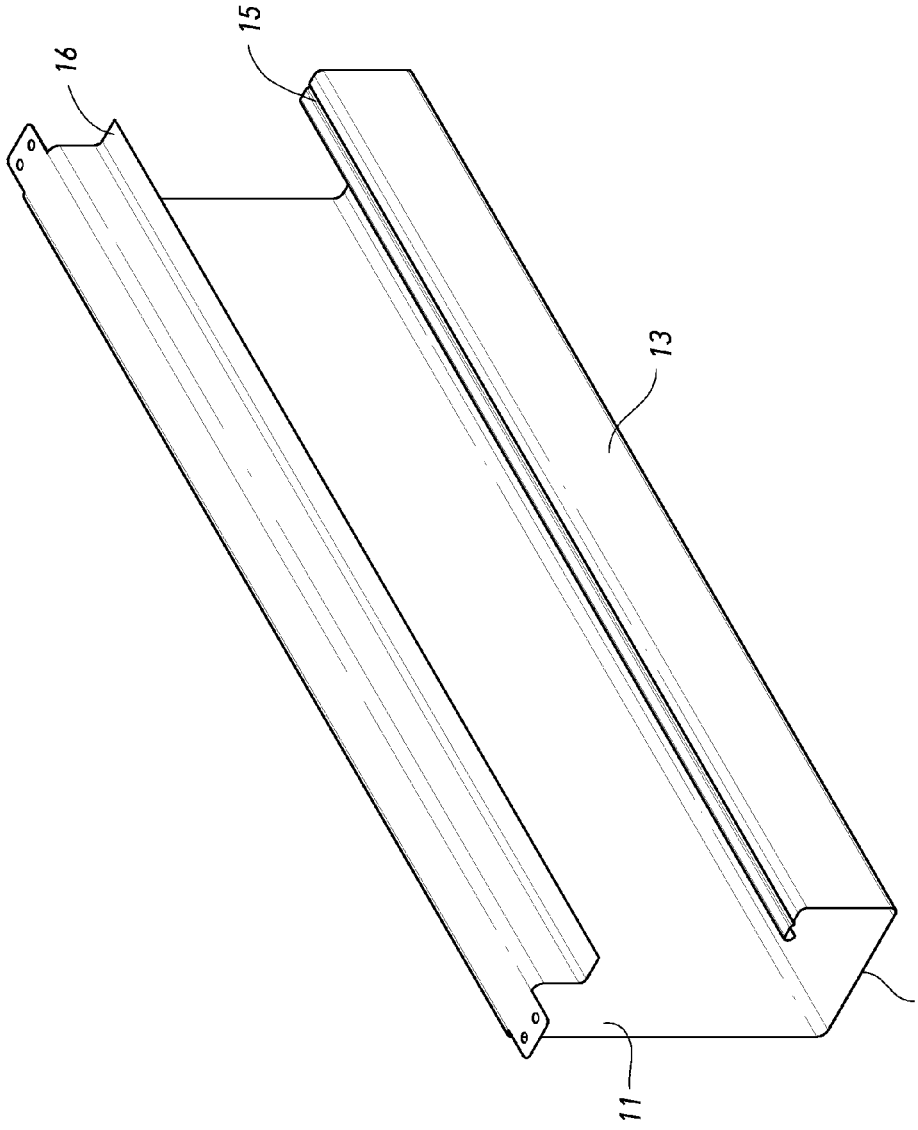


FIG. 7

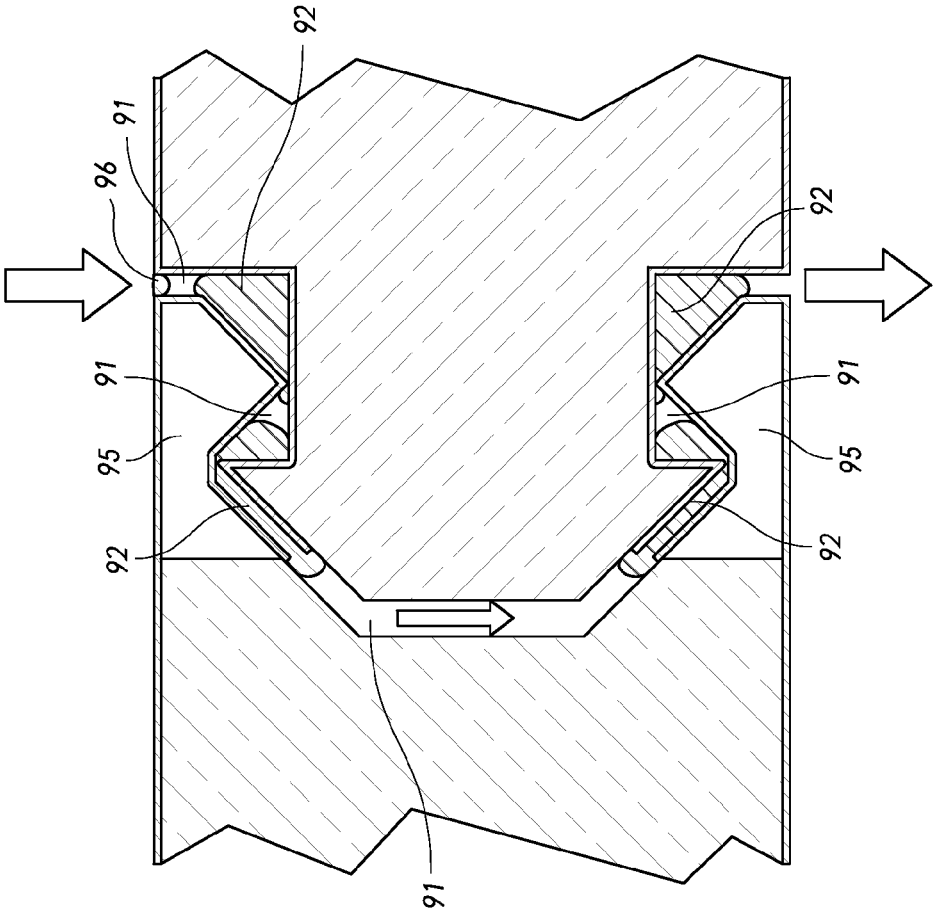


FIG. 9
(PRIOR ART)

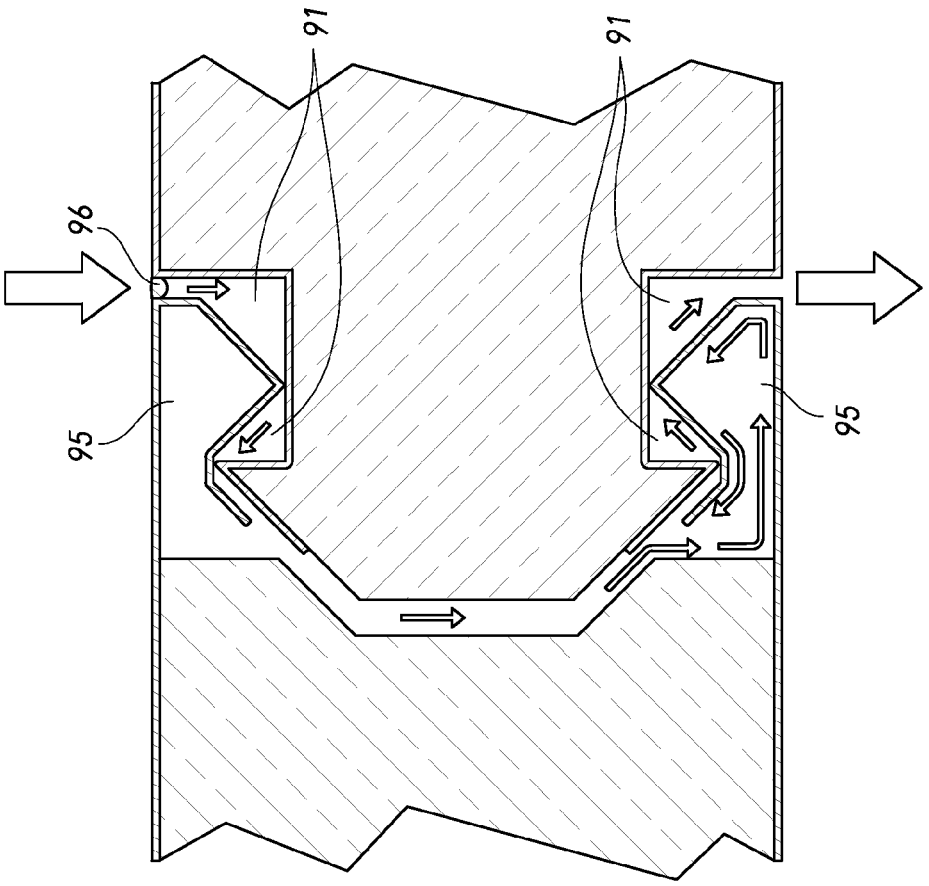


FIG. 10
(PRIOR ART)

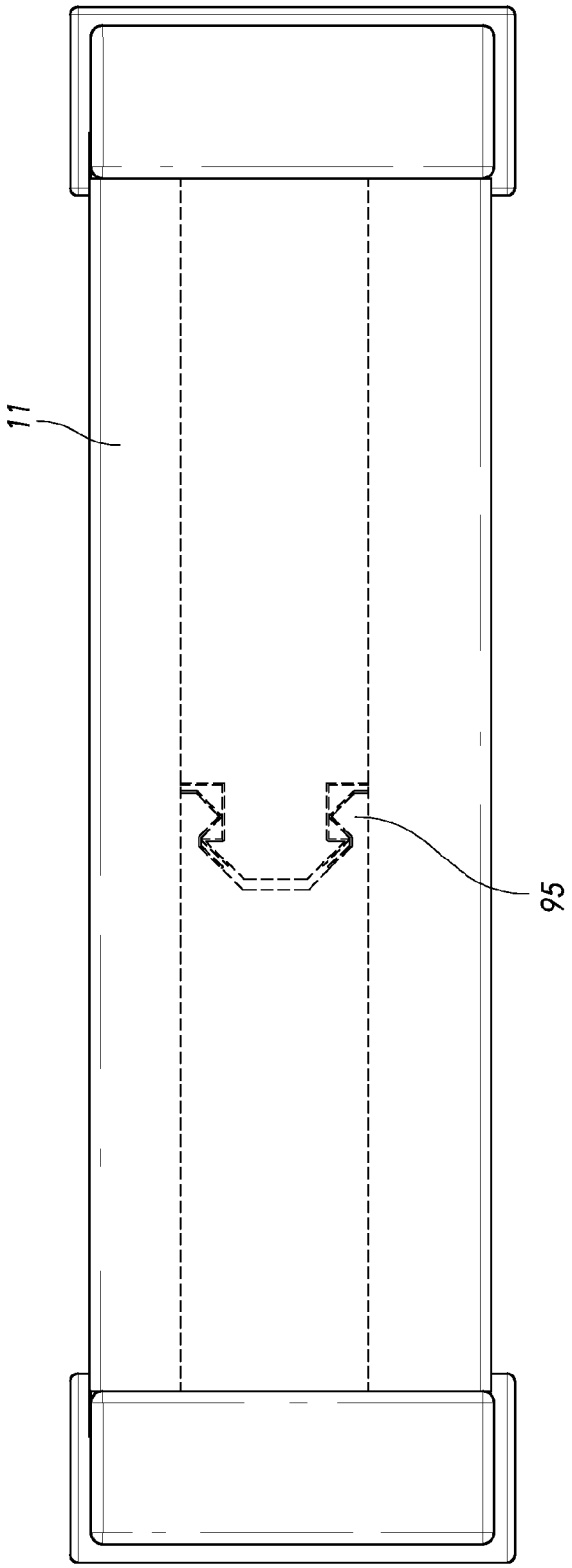


FIG. 11

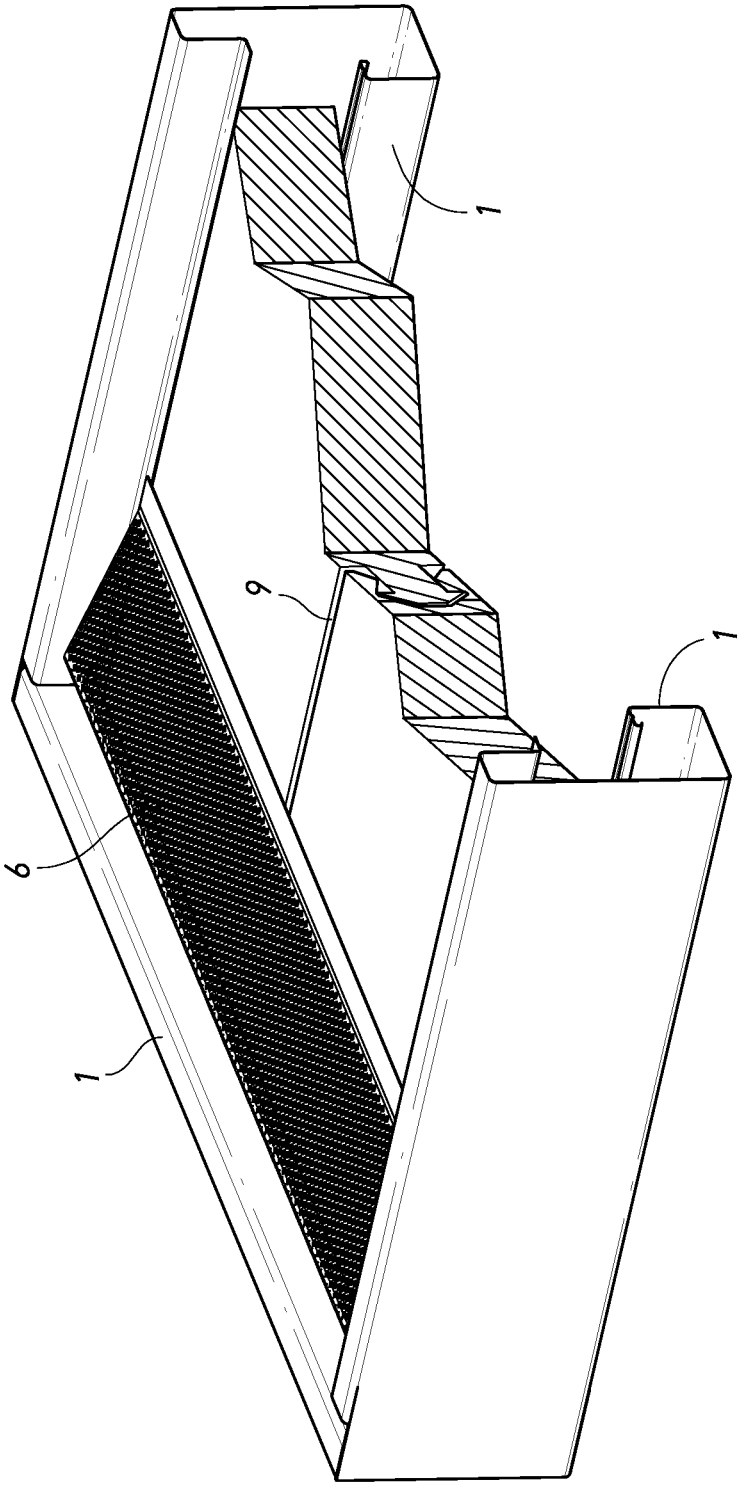


FIG. 12

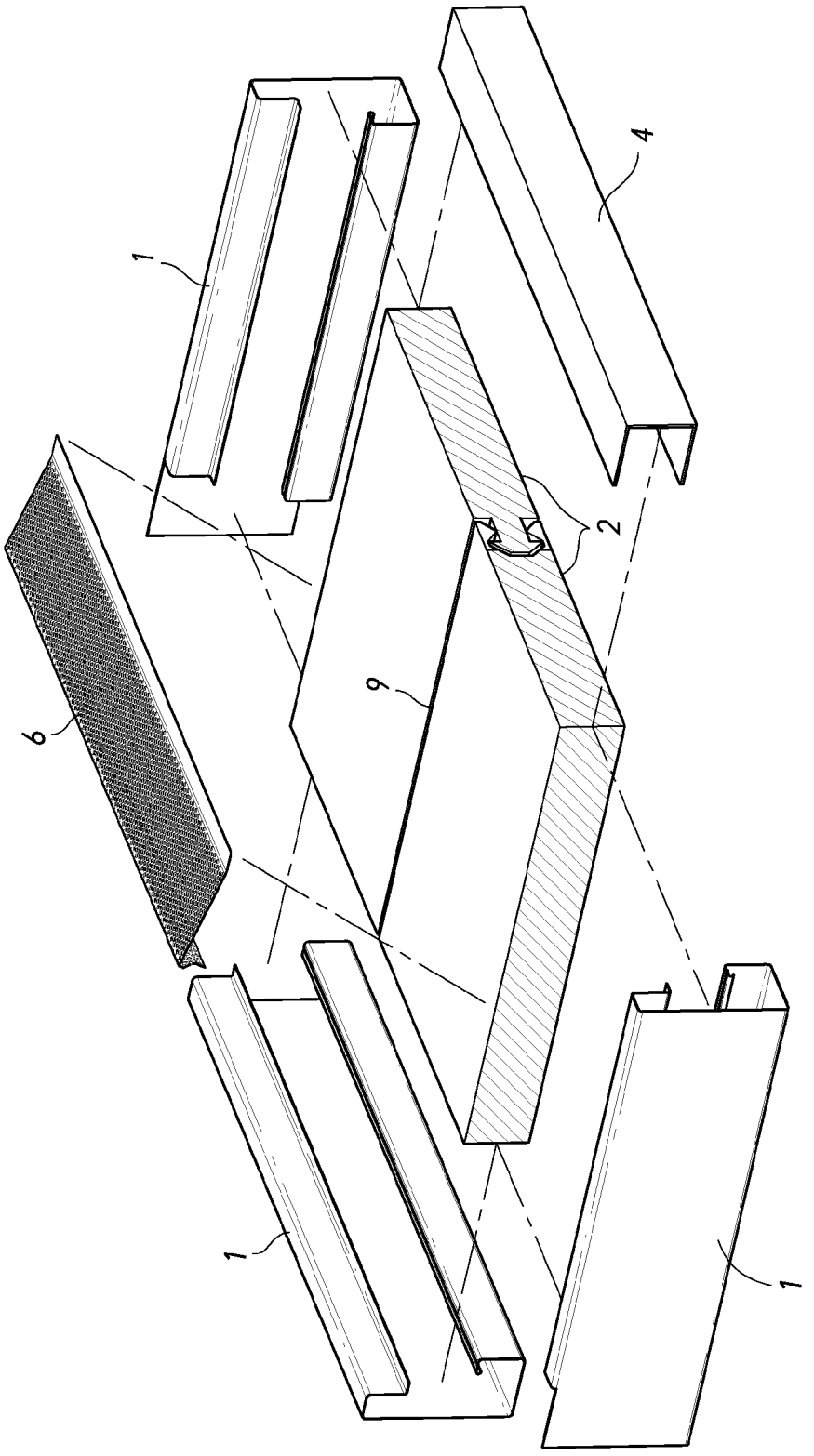


FIG. 13

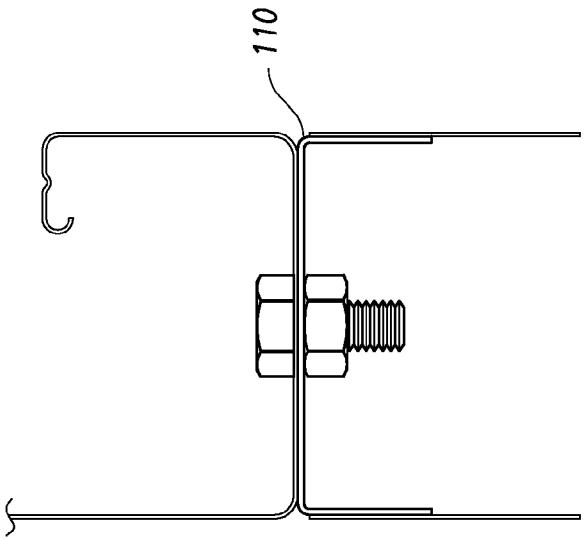


FIG. 15

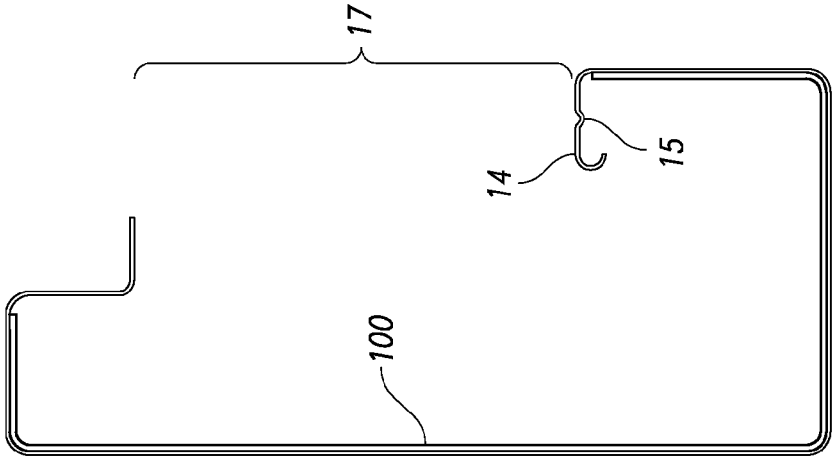


FIG. 14

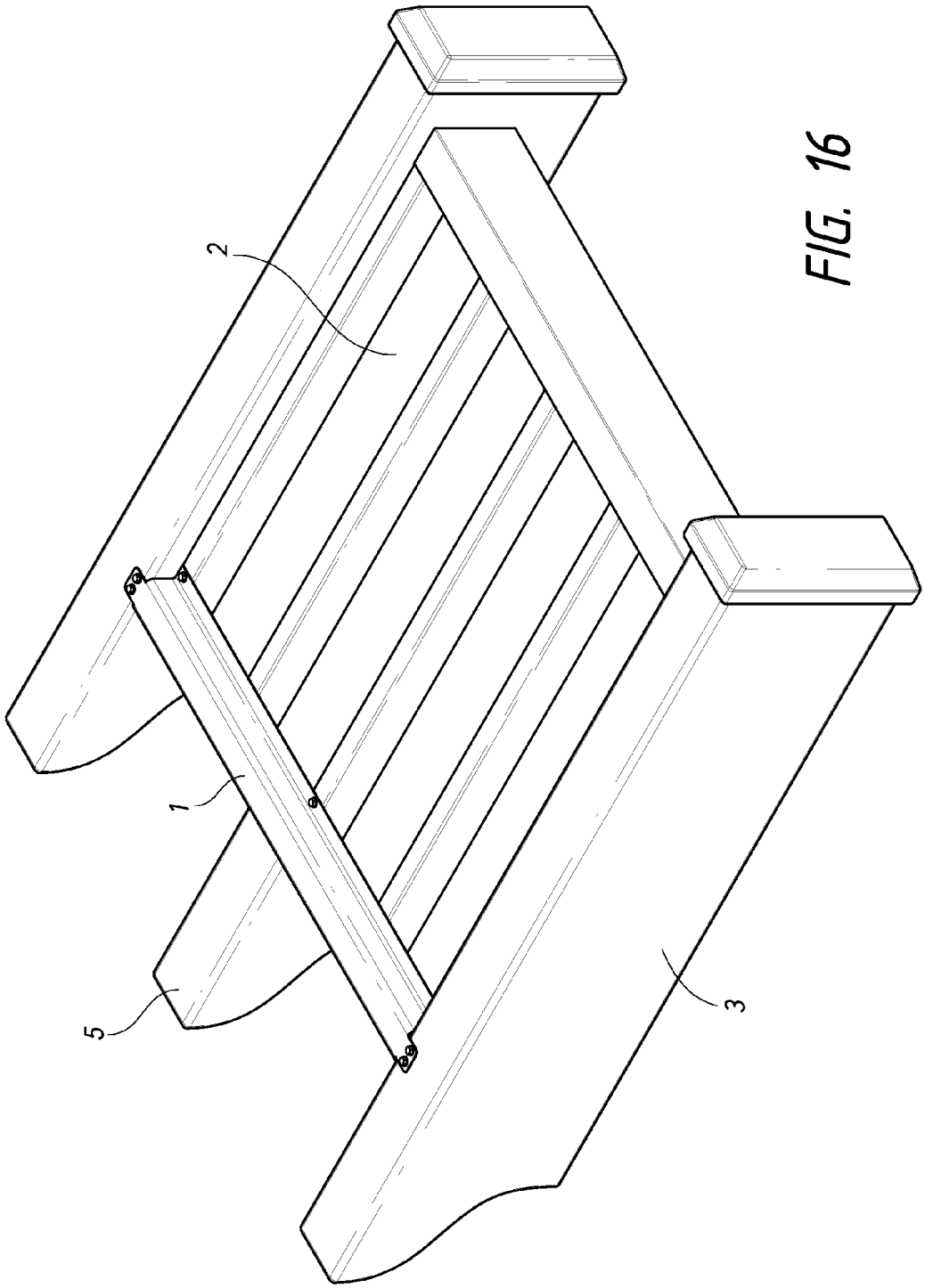


FIG. 16

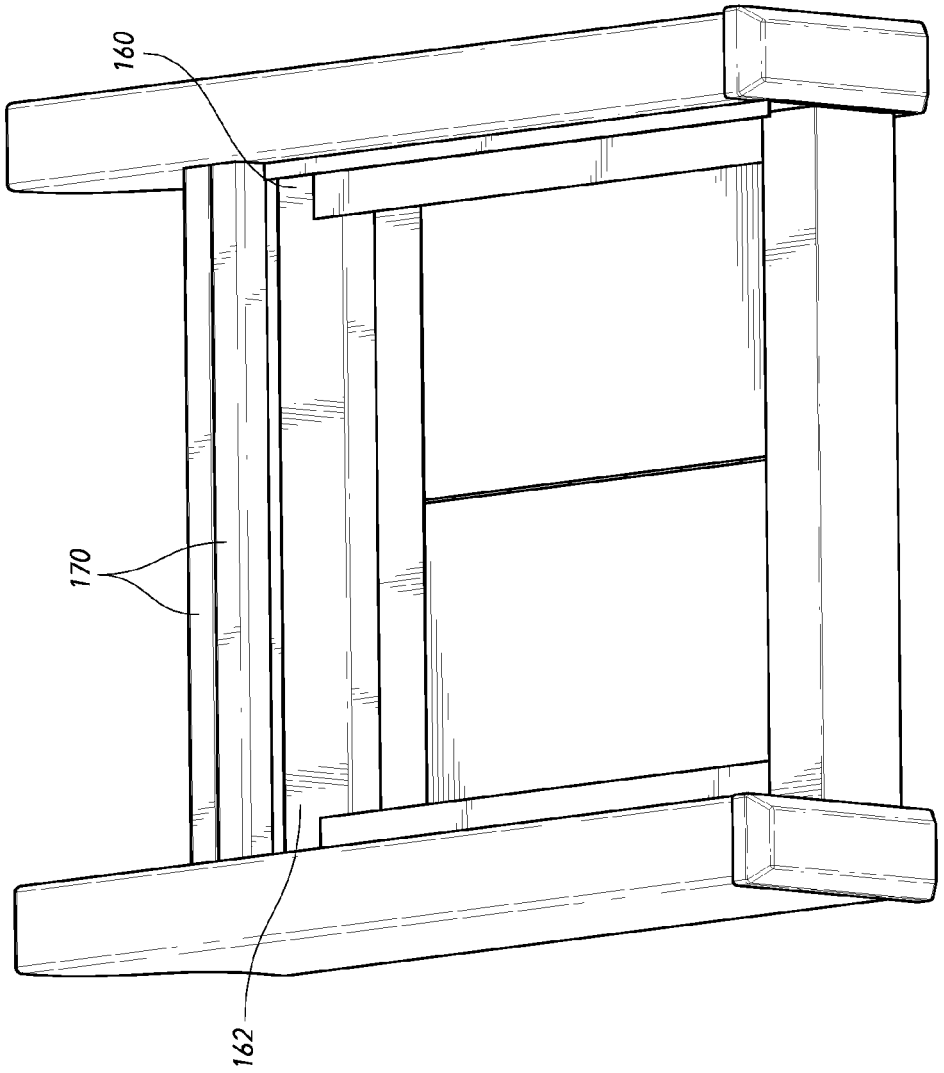


FIG. 17
(PRIOR ART)

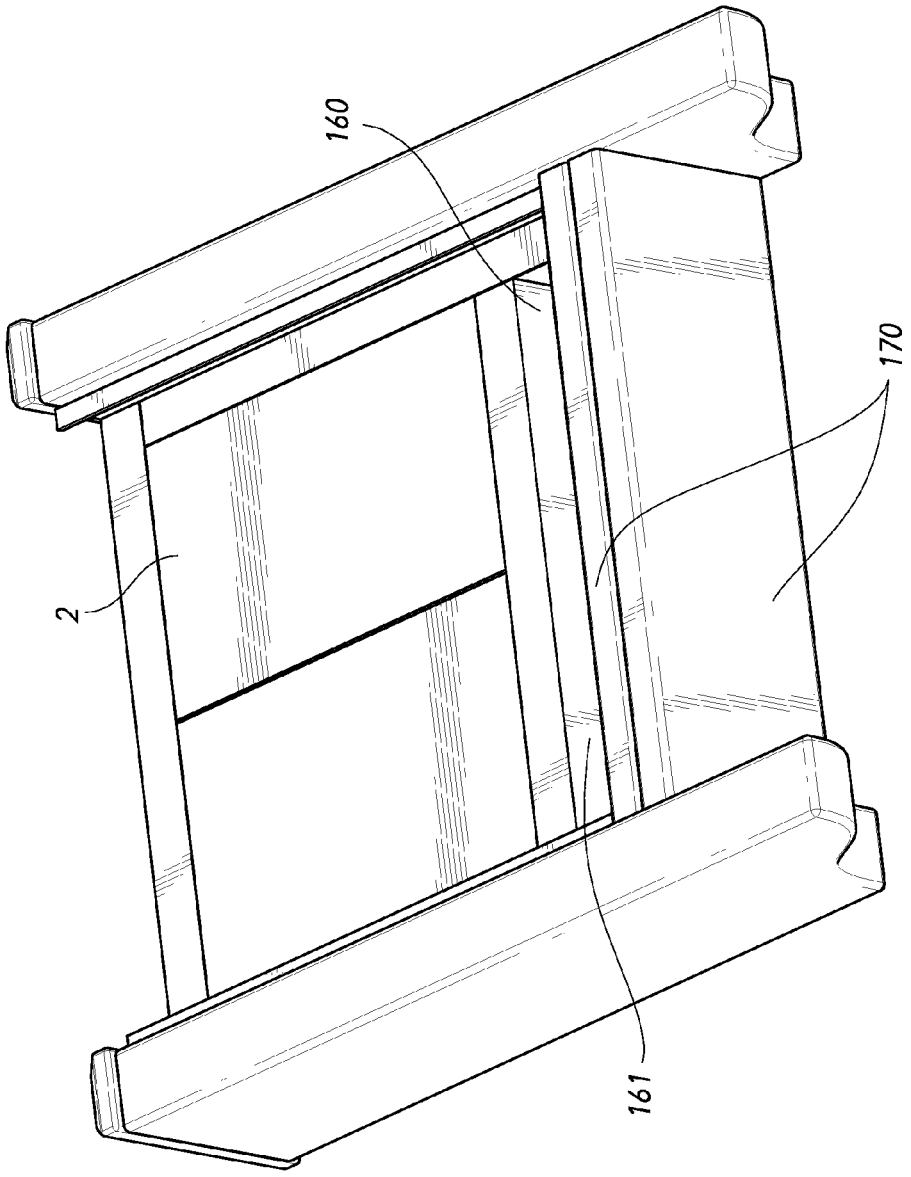


FIG. 18
(PRIOR ART)

FASCIA GUTTER SYSTEM AND COVERINGS USING THE SAME

BACKGROUND OF THE INVENTION

The invention relates to systems used to construct coverings. The systems include flat pan and insulated panels that interlock with one another along abutting edges. These two systems tend to be heavily used the covering industry. These designs have proven to be very reliable and long lasting.

The benefits of the insulated panels are that they insulate the area that they are covering and are fairly strong. The insulated panel coverings come with interlocking panels **2**. The panels **2** typically comprise of two metal layers with an insulated material located in the middle. The panels come in standard sizes (e.g. 2 feet in width and 4 inches in height) with interlocking components. This system has a long working life and comes with the industry standard of a 20 year warranty.

As can be seen in FIGS. **17** and **18**, in order to collect rainwater, a gutter **160** is present along the lower end of the sloped covering. Water will run off the top of the joined insulated panels **2** and collect in the gutter **160**. The water is then guided away. This system works as long as the integrity of the joints **9** is maintained.

The gutter **160** is level or just below level with the top surface of the insulated panels **2**. The gutter **160** is a truncated U-shaped with the shorter solid part being the gutter face **161**. The gutter face **161** abuts the face of the insulated panels **2**. The taller end is the gutter front **162** and is used so that water does not escape over the edge of the gutter **160** as it runs swiftly down the very smooth covering. Typically, since these gutters **160** are so unsightly, a wrapping kit **170** is employed. The gutter face **161** serves as an end cap and seal the joints **9**, ducts **95** and channels **91**. During construction, a seal is applied so that the panel **2** and the wrapping kit are sealed to the gutter **160**. Once water is located in the ducts **95** and/or channels **91**, the gutter face **161** prevents the water from escaping.

The wrapping kit **170** also adds another layer of materials onto the exterior of the covering. The wrapping kit **170** adds weight and cost to the covering. Additionally, it adds more points that must be properly sealed. The wrapping kit **170** increases the areas in which the integrity of the covering may fail.

Joints **9** are the weakest part of the system. Many times only an external seal **96** is applied to the joint. Other times, internal seals **92** are also applied. Both the external seals **96** and the internal seals **92** will typically deteriorate before the panels **2** will. The interlocking joints **9** have several designs, but work on the same basic principle. U.S. Pat. No. 5,216,861 to Meyerson and U.S. Pat. No. 5,502,939 to Zadok et al. discloses designs that has an interlocking system with sealant pockets within the joint **9**. As can be seen in FIG. **9**, the seals will create channels **91**. The internal seals **92** will be applied during, or before, the construction process as well as the external seal **96**. This will help elongate the life of the covering by limiting exposure to the sun to the internal seals **92**. Thus when the external seal **96** fails; there are several internal seals **92** that will extend the life of the covering. As mentioned before, these internal seals **92** create channels **91** that run along the length of the joint **9** and terminate at the gutter face **161**. As such, the water within the joint has no means to escape, except through the entrance in which it came. In other insulated panels, only one seal is present and is applied along the uppermost junction of the joint **9**, the external seal **96**. In these panels, water tends to accumulate in the duct **95**. Water can also collect in the ducts **95** when internal seals **92** are present.

However, the elements are not kind to these internal seals **92**. Eventually the rain and exposure will deteriorate all the internal seals **92**. This is partly because water will enter from the top and accumulate in these channels **91**, once the external seal **96** is breached. Due to weather, the properties of water and biological growth, these internal seals **92** will deteriorate. Water will accumulate in the duct **95** when the inner seals are or are not present. Once water fills the duct **95** it will overflow and water will flow past the duct **95**. As illustrated by FIGS. **9**, **10**, **17** and **18**, water will also tend to fill the channels **91** as there is no means for the water in the channels **91** to escape, due to the gutter face **161** of the gutter **160**. Once the bottom most internal seal **92** fails, if present, the covering now has a leak. If there is no seal between the duct and the bottom of the panel **2**, water will just flow out of the joint **9** once the duct **95** overflows. The standing water will decrease the effective lifespan of the entire covering. This is a major issue in the industry for as long as these insulated panels **2** have been employed. To date, there is no solution to this problem this overflow problem.

Another issue with the use of wrapping kits **170** is that they are not able to provide support for the covering. Typically coverings do not to extend too much past the boundaries of the area wished to be covered. Since the wrapping kits **170** extend the borders of the covering, the support columns must be brought further into the area to be covered so as to be properly supported. This will decrease the useful space of the area being covered.

SUMMARY OF THE INVENTION

In one embodiment, the fascia gutter **1** is employed with an insulated panel **2**. By having the fascia gutter **1** running transverse to the joint **9** and open to the channels **91** (as seen in FIG. **11**), the entire joint **9** is in communication with the fascia gutter **1**. Thus, just like the top of the panel, water present inside the joint **9**/channels **91**/duct **95** will flow into the fascia gutter **1** and be removed from the joint **9**. This will decrease the time that the seals **92** are exposed to water and/or time that the duct **95** holds water.

It is believed, and stands to reason, that less time these seals **92** are exposed to water, standing or otherwise, the longer they will maintain their integrity. Also if water is evacuated from the duct **95**, water will not overflow the duct **95** and out the joint **9**. The longer the integrity of the joint **9** is maintained, the longer the covering will last without maintenance.

When a covering system employs insulated panels, the use of the fascia gutter **1** allows the system to be built without a wrapping kit **17**.

BRIEF DESCRIPTION OF THE DRAWINGS

Many aspects of the embodiments can be better understood with references to the following drawings. The components in the drawings are not necessarily drawn to scale, the emphasis instead being placed upon clearly illustrating the principles of the embodiments. Moreover, in the drawings, like reference numerals designate corresponding parts throughout the several views.

FIG. **1** shows an embodiment of a covering;

FIG. **2** shows a cross-section of an embodiment;

FIGS. **3** and **4** show embodiments of a covering employing a rafter tail;

FIGS. **5** and **6** shows a cross-section of an embodiment;

FIGS. **7** and **8** show embodiments of the fascia gutter;

FIGS. **9** and **10** shows joint assemblies according to the prior art and the progression of water, represented by the arrows, in the joint assemblies;

FIG. **11** is a front view of an embodiment of with an insulated panel and a joint;

FIGS. **12** and **13** show an embodiment of a covering;

FIG. **14** shows an embodiment having structural member;

FIG. **15** shows an embodiment having a column attachment;

FIG. **16** shows an embodiment employing a flat pan and rafter tail; and

FIGS. **17** and **18** show a covering according to the prior art.

DETAILED DESCRIPTION OF THE DRAWINGS

Referring to FIGS. **1** and **2**, an embodiment with rafters **3** and insulated panels **2** is shown. There are caps **4** present on the rear and sides of the panels **2**. The rafters **3** are connected to the fascia gutter **1**, and the caps **4** are present on the side of the panels **2**. A debris guard **6** is located near the front of the panels **2**. The debris guard **6** comprises a base **61** and a screen **65**. The base **61** is secured to the panels **2** and/or caps **4**. The debris guard **6** increases its profile such that it is greater than the gap **7** defined by the panels **2** and the protrusion **16**. In some embodiments, the base **61** is merely an extension of the screen **65**. In other embodiments, the base **61** is a solid piece of material. The debris guard **6** helps prevent debris, such a leaves, from entering and thus clogging the fascia gutter **1**. The rise of the debris guard **6** from the base **61** to the overhang **64** allows leaves to be easily blown away.

In one embodiment, the debris guard **6** comprises an end **62**, a protrusion bend **63**, and an overhang **64**. The overhang **64** extends over the edge of the protrusion **16**. This will help ensure that the clogging debris will not be allowed to slip around the front side of the debris guard **6**. In some embodiments the overhang **64** will actually make contact with the fascia gutter **1**. The end **62** of the debris guard **6** also extends past the end of the protrusion **16** as well. The protrusion bend **63** is located between the end **62** and the overhang **64**. In some embodiments, the protrusion bend **63** is located at the vertex of a sharp bend or a rounded bend. The protrusion bend **63** can be in contact and abut the protrusion **16**

Referring to FIGS. **6** and **8**, the fascia gutter **1** comprises a front member **11**, a bottom member **12**, a rear member **13**, a ledge **14**, a protrusion **16**, and an opening **17**, defined by the ledge **14** and the protrusion **16**. The opening **17** is large enough to allow the panels **2** to be inserted and have a gap **7** between the panels **2** and the protrusion **16**. The gap **7** allows for water that collects on the top surface of the panel to enter the fascia gutter **1**. In some embodiments the gap **7** is ½ inch or greater. It is also understood that the gap **7** can be of any size. There is also a receiving gap **8** that exist between the panel **2** and the front member **11**. The receiving gap **8** will allows the water that flows through the gap **7** to flow down into the receiving space. Some standard thicknesses for insulated panels **2** are 4 inches and 3 inches, and embodiments that can be used with those insulated panels **2** can have an opening **17** of 4½ and 3½ inches respectively.

As can be seen in FIG. **11**, in one embodiment, insulated panels **2** are employed. As seen from the front of the fascia gutter **1**, the joint **9** is shown in shadow. By having the fascia gutter **1** running transverse to the joint **9** and open to the channels **91** and ducts **95**, the entire joint **9** is in communication with the fascia gutter **1**. Thus, just like the top of the panel, water present inside the joint **9**/channels **91**/ducts **95** will flow into the fascia gutter **1** and be removed from the joint **9** due to the slope of the covering. Water that happens to enter into anyone of the channels **91** and or ducts **95** is free to vacate into the fascia gutter **1**. This will decrease the time that the internal seals **92** are exposed to the water and or water is present in the ducts **95**. Thus having the joint **9** exposed to the opening **17**, the fascia gutter **1** prevents or greatly reduces the standing water within the joint **9**.

It is believed that less time the internal seals **92** are exposed to water and standing water, the longer they will maintain their integrity. The longer the integrity of the joint **9** is maintained, the longer the covering will last without maintenance. Additionally, the sooner water is evacuated from the duct **95**; less water will accumulate and will not overflow through the bottom of the joint **9**.

Also if any water happens to get into the body of the insulated panel, they are also open to the fascia gutter **1**. In some embodiments, conduits (not shown) will be located in the insulated panels **2** (e.g. on the bottom of the insulation) to facilitate removal of water that happens to enter the insulated panels **2**.

In some embodiments, the insulating material of the insulated panels **2** will include antibacterial, antimicrobial substances, and/or additives to help limit the growth of bacteria and/or microbes in and/or on the insulating material.

As can be seen in FIGS. **5-8**, some embodiments of the fascia gutter **1** includes a guiding groove **15** located on the ledge **14**. During construction, the builders typically are inserting the ledge fasteners **81**, blindly through the panels **2**. The guiding groove **15** helps guide the ledge fasteners **81** so that when they come into contact with the ledge **14**, they are secured to the ledge **14**. The width and shape of the guiding groove **15** is not limited (e.g. any concave shape). If the ledge fastener **81** misses the ledge **14**, it will likely not be connecting the panels **2** to anything. In some embodiments, the protrusion **16** also has a guiding groove **15** (not shown).

The protrusion fastener **82** extends from above the protrusion **16** to the panels **2**. However the gap **7** must be maintained. In some embodiments, it is incumbent upon the skill of the installer to maintain the gap **7**. In other embodiments, a spacer (not shown) is located between the protrusion **16** and the panels **2**. Examples of spacers include, but are not limited to, one or more nuts, one or more washers, and tubes. The spacer can be located only in the proximity of the protrusion fastener **82**. Yet in other embodiments, a portion of the debris guard **6** can serve as a spacer (not shown). In some of those embodiments, the debris guard **6** can have a stepped configuration between the protrusion bend **63** and the end **62**. The protrusion **16** will rest upon the step.

Referring to FIGS. **3** and **4**, some embodiments include a rafter tail **5** that can be attached to the fascia gutter **1** along the front member **11**. In some embodiments the front member **11** is flat with an embossed finish, giving the appearance from the front of being a wood like structure. Then the rafter tail **5** can be installed to give the look from the front and below that a full rafter is employed. This will help maintain the natural look of the covering, e.g. a wood covering, while allowing for longer spans in between rafters **3**. The location of the one or more rafter tails **5** can be set as desired. The rafter tails **5** can be attached by know methods including, but not limited to, one or more fasteners (not shown) and/or adhesives.

As can be seen in FIGS. **10** and **11**, additional fascia gutters **1** can run parallel to the joints **9** and can be, or not be, in communication with the fascia gutter **1** that runs transverse to the joints **9**. While not shown, debris guard **6** can run along the length of the parallel fascia gutters **1** as they are able to accept water that has collected on the covering. This can increase the efficiency of evacuating water from the covering.

As can be seen in FIG. **13**, some embodiments can include a structural member **100**. The structural member **100** can be an insert that is separate from and has a shape that at least partially corresponds with the fascia gutter **1**. In other embodiments, the structural member **100** is integral with the fascia gutter **1** or bonded thereto. The structural member **100** can be of the same material of the fascia gutter **1** or a different material than the fascia gutter **1**. The structural member **100** can increase the strength of the fascia gutter **1**. While a column can be attached to the fascia gutter **1** without a structural member **100**, the span between columns can be increased when a structural member **100** is employed to the same fascia gutter **1**. The thickness and material of the structural member **100** can be selected according to need.

As can be seen in FIG. **14**, in one embodiment, a column attachment **110** can be connected to the fascia gutter **1** as a means to attach the fascia gutter **1** to a column. In some embodiments, the column attachment **110** is secured to the fascia gutter **1** by a fastener. In other embodiments, the column attachment **110** can be secured by an adhesive. Yet in other embodiments, the column attachment **110** is integral with the fascia gutter **1**. The column attachment **110** has a shape that at least partially corresponds to the column and is able to slide therein. In some embodiments, the attachment is barely able to slide into the column and has a frictional fit with the column. In some embodiments, fasteners and/or adhesives can be used as well to secure the column attachment **110** to the column. The downward length of the column attachment **110** can vary. A greater length can increase the stability of the connection.

As seen in FIG. **15**, the fascia can be used with a flat pan panel **2**. When used with a flat pan panel **2** there need not be a gap **7**. However a receiving gap **8** is still present. Thus the opening **17** can, but need not, correspond to the thickness of the flat pan panel **2**. If the flat pan panel **2** is 4 inches in height, the opening **17** only needs to be 4 inches in height. Some embodiments the opening **17** will be slightly larger (e.g. 0.1 inches to 1 inch) than the height of the flat pan panel **2** to ease alignment during construction of the covering. One or more rafter tails **5** can be located on the front member **11**. In other embodiments, a W-pan roof panels are used.

In some embodiments, the fascia gutter **1** is roll formed from aluminum sheets. In other embodiments, the fascia gutter **1** and the rafter tails **5** can have an embossed texture on the external faces thereof. In one embodiment, the front member **11** is 6.5 inches, the bottom member **12** is 3 inches, the rear member **13** is 2 inches, and the ledge **14** is 0.75 inches. In accommodating panels **2** of different thickness, the length of the front member **11** may, or may not, be altered, and the height of the protrusion **16** relative to the bottom member **12** may, or may, not be altered. The length of the front member **11** may remain consistent for panels **2** of different sizes, and other dimensions can be altered.

By using the fascia gutter **1** with insulated or flat pan panels **2**, the use of a wrapping kit **170** is avoided. The use of the fascia gutter **1** in coverings enables one to retain all of the functionality of a wrapping kit **170** without the added weight and cost. The fascia gutter **1** also enables the columns to be placed further on the periphery of the covering. In embodiments employing a structural member **100**, the spacing of the columns can be increased; while, in order to maintain the classic appearance of a wooden covering, rafter tails **5** can be applied directly to the fascia gutter **1**. The structural member **100** can be made from extruded aluminum or galvanized steel.

Depending on the embodiment, certain steps or methods described may be removed, others may be added, and the sequence of steps may be altered. Those skilled in the art will now see that certain modifications can be made to the apparatus and methods herein disclosed with respect to the illustrated embodiments, without departing from the spirit of the instant invention. And while the invention has been described above with respect to several embodiments, any element and/or step described in reference to any particular embodiment is hereby disclosed to be associated with any other embodiment of the invention. It is understood that the invention is adapted to numerous rearrangements, modifications, and alterations, and all such arrangements, modifications, and alterations are intended to be within the scope of the invention.

The invention claimed is:

1. An apparatus comprising:
a front member;
a bottom member;
a rear member;
a ledge comprising a linear section, wherein the linear section extends towards the front member;
a protrusion; and
a panel;
wherein the bottom member connects the front member to the rear member; the front member, the bottom member, and the rear member define a receiving space; the ledge is connected to the rear member; an opening is defined by the ledge and the protrusion; the opening is in direct communication with the receiving space; the panel is in contact with the ledge; a receiving gap is defined by the panel and the front member; and a gap is defined by the panel and the protrusion.

2. The apparatus of claim **1**, wherein the panel is an insulated panel, the insulated panel comprises a channel, and the channel is in communication with the receiving space.

3. The apparatus of claim **2**, further comprising a debris guard; wherein the debris guard abuts a bottom of the protrusion.

4. The apparatus of claim **1**, further comprising a second panel and the panel and the second panel form two interlocking panels, and the two interlocking panels are joined at a joint; the joint comprises a channel, and the channel is in communication with the receiving space; and the joint is in contact with the ledge.

5. The apparatus of claim **4**, wherein the joint further comprises an internal seal; the internal seal and the two interlocking panels define a duct; and the duct is in communication with the receiving space.

6. The apparatus of claim **1**, further comprising a debris guard; wherein the debris guard abuts the protrusion.

7. The apparatus of claim **1**, wherein the panel is a flat pan panel.

8. The apparatus of claim **1**, further comprising a structural member; wherein the structural member has a shape that at least partially corresponds to the receiving space.

9. The apparatus of claim **1**, further comprising a column attachment and a column; wherein the column attachment is secured to the bottom member and is in contact with the column.

10. The apparatus of claim **1**, further comprising a rafter tail; wherein the rafter tail is secured to the front member.

11. The apparatus of claim **1**, wherein at least a portion of the fascia gutter comprises an embossed finish.

12. The apparatus of claim **1**, further comprising a groove, wherein the groove is defined in the ledge.

13. An apparatus comprising:
two panels, wherein the two panels define a surface; and
a fascia gutter, the fascia gutter comprising:
a front member;
a bottom member; and
a rear member;
wherein the bottom member connects the front member to the rear member; the front member, the bottom member, and the rear member define a receiving space; the two panels are joined at a joint; the

joint comprises a channel, and the channel is in communication with the receiving space; and a receiving gap is defined by an end of the two panels and the front member.

14. The apparatus of claim **13**, further comprising a groove, wherein the groove is defined in a ledge.

15. An apparatus comprising:

a panel; and

a front member;

a bottom member;

a rear member;

a ledge; and

a protrusion;

wherein the bottom member connects the front member to the rear member; the front member, the bottom member, and the rear member define a receiving space; the ledge is connected to the rear member; an opening is defined by the ledge and the protrusion; the opening is in direct communication with the receiving space; the panel is in contact with the ledge; a receiving gap is defined by the panel and the front member; and a gap is defined by the panel and the protrusion.

16. The apparatus of claim **15**, further comprising a groove, wherein the groove is defined in the ledge.

17. The apparatus of claim **15**, further comprising a second panel and the panel and the second panel form two interlocking panels, and the two interlocking panels are joined at a joint.

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